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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,635	06/05/2006	Willem Marie Julia Marcel Coene	FR040143	5457

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EXAMINER	
BOUTSIKARIS, LEONIDAS	

ART UNIT	PAPER NUMBER
2872	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/581,635	Applicant(s) COENE ET AL.	
	Examiner Leo Boutsikaris	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/5/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 5-6, 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Horimai (EP 1306732A1).

Regarding claim 1, Horimai discloses a holographic optical storage device (Fig. 1) for recording a data page in a holographic medium 1, said device comprising means for generating a laser signal beam 21, means for modulating the phase of the signal beam in the form of phase spatial light modulator ("SLM") 13, so that the data page is encoded, and means for interfering the modulated signal beam 22A with a reference beam 22B inside the holographic medium in the form of beam splitter 12 and lens 11 ([0044], [0047]).

Regarding claim 3, the holographic medium 1 comprises at least one phase-modulated data page.

Regarding claims 5, 9, the holographic storage system of Fig. 1 comprises means for retrieving the phases of the individual bits of the phase modulated data page in the form of photodetector 14, which receives reproduction light 36 reflected from the holographic medium. The composite light incident onto the detector conveys information about the phases of the various data pixels ([0055], [0058]-[0060]).

Regarding claim 6, the system of Horimai further comprises means for generating a reference signal 22B (inherent), means for directing the reference signal towards the holographic medium in the form of beam splitter 12 and lens 11, so as to generate a phase-modulated reconstructed signal beam 36 (Fig. 2), means for detecting the phase-modulated reconstructed signal beam in the form of photodetector 14, means for generating a probe signal 37 in the form of holographic material 1 that reflects the incident reference beam to become probe signal 37, and means for interfering said probe signal 37 with the phase-modulated reconstructed signal beam 36 before the latter reaches the detector in the form of beam splitter 12 ([0055]).

Regarding claim 8, in one embodiment, the phase of the probe beam is varied and the intensity of the detected composite light is measured (phase stepping procedure according to [0055] of the specification of the present application), so that the phases of the individual data bits are retrieved ([0148]-[0152]).

Regarding claim 10, a computer controls the operation of the SLM, loading the various data pages thereon.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horimai (EP 1306732A1) in view of Takeda (US 3,890,035).

Horimai discloses all the limitations of said claims, except for teaching that amplitude modulation is imposed on the signal beam in addition to phase modulation. Takeda discloses a SLM used in conjunction with holographic recording (analogous art), wherein it is taught that an SLM may be used to impose both amplitude modulation (part 15-1) and phase modulation (part 15-2) on a signal beam 3 before it interferes with a reference beam 4 to record interference holographic patterns in material 1 (Fig. 6, and lines 41-62, col. 4, lines 10-23, col. 7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modulate both the amplitude and the phase of the signal beam in the holographic system of Horimai, as taught by Takeda, since such modulation is advantageous for recording computer generated holograms (see lines 12-22, col. 1, 19-23, col. 7 in Takeda).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horimai (EP 1306732A1) in view of Voelkl (WO 01/50418).

Horimai discloses all the limitations of said claim except for teaching the specifics about processing the information from the photodetector, namely taking the Fourier transform of the

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detected signal and then calculating the inverse Fourier transform of one of the side-bands.

Voelkl discloses a method of reconstructing phase information from a digitized image such as a hologram, comprising the steps of applying the Fourier transform to the digital image, and subsequently applying an inverse Fourier transform to the sideband (see page 4, specially lines 19-24). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the computational steps of Voelkl to the detected signal in the holographic system of Horimai, since this Fourier transform steps allow for the acceleration of the reconstruction process for the phase information from the detected digital signal (see lines 15-18, p. 4 in Voelkl).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Leo Boutsikaris whose telephone number is 571-272-2308. The examiner can normally be reached on M-F, 10-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR

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system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Leo Boutsikaris, Ph.D., Esq.
Primary Patent Examiner, AU 2872
August 26, 2007



LEONIDAS BOUTSIKARIS
PRIMARY EXAMINER